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## **CLAIMS**

What is claimed is:

- 1. A method for refreshing a developer, the method comprising the steps of:
- (a) developing an imaged printing plate precursor with an aqueous, essentially silicate-free developer having a pH greater than about 12, and producing a loaded developer comprising loaded solids,

in which:

the printing plate precursor comprises an imageable layer over a hydrophilic substrate,

the imageable layer comprises a polymeric material,

the polymeric material is either (i) dispersible in an aqueous solution that has a pH of about 12.0 to about 14.0 or (ii) soluble in an aqueous solution that has a pH of about 12.0 to about 14.0 and insoluble in an aqueous solution that has a pH below about 11.0,

the loaded solids comprise the polymeric material, and the loaded developer has a pH of about 12.0 to about 14.0 and a loaded solids content of about 0.1 wt% to about 10 wt%;

- (b) lowering the pH of the loaded developer to below about 11.0 and producing a liquid whose pH is below about 11.0;
- (c) separating insoluble material from the liquid produced in step (b) and producing an essentially colorless liquid, in which the insoluble material comprises material dispersed in the developer, a precipitate formed in step (b), or a combination thereof; and
- (d) raising the pH of the essentially colorless liquid to about 12.0 to about 14.0 and producing a refreshed developer.
  - 2. The method of claim 1 in which the pH of the aqueous, essentially silicate-free developer is about 12.5 to about 13.7.
- The method of claim 1 additionally comprising, after step (d), the
  step of developing imaged printing plate precursors with the refreshed developer.

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- 4. The method of claim 1 in which the insoluble material comprises a precipitate produced in step (b).
- 5. The method of claim 4 in which the polymeric material is selected from the group consisting of phenolic polymers, carboxylic acid polymers, sulfonamide polymers, and mixtures thereof.
- 6. The method of claim 5 in which the printing plate precursor is a one-layer element.
- 7. The method of claim 6 in which the imageable layer comprises a compound that comprises an *o*-diazonaphthoquinone moiety.
- 8. The method of claim 1 in which the printing plate precursor comprises a photothermal conversion material.
- 9. The method of claim 8 in which the insoluble material comprises a precipitate produced in step (b).
- 10. The method of claim 9 in which the polymeric material is selected from the group consisting of phenolic polymers, carboxylic acid polymers, sulfonamide polymers, and mixtures thereof.
- 11. The method of claim 10 in which the printing plate precursor comprises at least one layer between the imageable layer and the hydrophilic substrate.
- 20 12. The method of claim 11 in which the at least one layer comprises the photothermal conversion material.
  - 13. The method of claim 12 in which the imageable layer comprises a dissolution inhibitor.
- 14. The method of claim 8 additionally comprising, after step (d), the25 step of developing imaged printing plate precursors with the refreshed developer.
  - 15. The method of claim 14 in which: the polymeric material is a phenolic polymer;

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the printing plate precursor comprises at least one layer between the imageable layer and the hydrophilic substrate; and

the at least one layer comprises the photothermal conversion material.

- 16. The method of claim 1 in which hydrochloric acid is added to the developer in step (a).
  - 17. The method of claim 1 in which the loaded solids content is about 4 wt% to about 6 wt%.
  - 18. The method of claim 17 in which the pH of the aqueous, essentially silicate-free developer is about 12.5 to about 13.7.
  - 19. The method of claim 18 additionally comprising, after step (d), the step of developing imaged printing plate precursors with the refreshed developer.
  - 20. An apparatus for refreshing loaded developer, the apparatus comprising:

a first tank connected to a source of the loaded developer, the tank comprising a developer level sensor;

a source of acid connected through an acid dispensing valve to the first tank;

a first controller connected to the valve, the controller adapted to turn the valve on and off on command from the sensor in the first tank;

a fluid/solid separator connected to the first tank through a discharging valve;

a first conduit connected to the fluid solid separator for directing separated fluid from the fluid/solids separator to a pH treatment tank;

a second conduit connected to the fluid solid separator for directing separated solids to a solids receptor;

a source of a basic solution connected through a basic solution dispensing valve connected to the pH treatment tank; and

a second controller connected to the basic solution dispensing valve, the second controller turning the basic solution dispensing valve on and off.

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- 21. The apparatus of claim 20 in which the first tank additionally comprises a pH meter, and in which the first controller is adapted to turn the acid dispensing valve on when the liquid level in the first tank reaches a predetermined level and off when the pH meter indicates a predetermined pH level in the first tank.
- 22. The apparatus of claim 21 in which the second controller turns the basic solution dispensing valve on for a predetermined period of time.
- The apparatus of claim 22 further comprising a mixer in the pH 23. treatment tank.
- 24. The apparatus of claim 23 in which the pH treatment tank additionally comprises a pH sensor and in which the second controller turns the basic solution dispensing valve off at a predetermined pH level in the pH treatment tank.
- The apparatus of claim 24 in which the source of loaded developer 25. is a developing tank of a developing processor for developing imaged printing plate precursors with an aqueous, essentially silicate-free developer having a pH greater than about 12, and producing a loaded developer comprising loaded solids, in which:

the printing plate precursor comprises an imageable layer over a hydrophilic substrate,

the imageable layer comprises a polymeric material,

the polymeric material is either (a) dispersible in an aqueous solution that has a pH of about 12.0 to about 14.0 or (b) soluble in an aqueous solution that has a pH of about 12.0 to about 14.0 and insoluble in an aqueous solution that has a pH below about 11.0,

the loaded solids comprise the polymeric material, and the loaded developer has a pH of about 12.0 to about 14.0 and a loaded solids content of about 0.1 wt% to about 10 wt%.